DOCUMENT RESUME

ED 109 244 TM 004 708

AUTHOR Carter, Wayne E.
TITLE A Taxonomy of Evaluation Models: Use of Evaluation Models in Program Evaluation.
PUB DATE [Apr 75]
NOTE 37p.

EDRS PRICE MF-$0.76 PLUS POSTAGE. HC Not Available from EDRS.
DESCRIPTORS Classification; Comparative Analysis; Decision Making; Educational Needs; Educational Planning; *Evaluation Methods; Information Needs; *Models; *Program Evaluation; *Taxonomy

ABSTRACT

In the nine years following the passage of the Elementary Secondary Education Act (ESEA), several models have been developed to attempt to remedy the deficiencies in existing educational evaluation and decision theory noted by Stufflebeam and co-workers. Compilations of evaluation models have been undertaken and listings exist of models available for providing information for the decision process. By comparison of the models found in a literature search, the author has constructed a taxonomic representation of the existing decision-oriented evaluation models for the purpose of providing suggestions for the cooperative use of the models in accomplishing effective and efficient program evaluations. (Author)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED109244

A TAXONOMY OF EVALUATION MODELS: USE OF EVALUATION MODELS IN PROGRAM EVALUATION

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Wayne E. Carter

PERMISSION TO REPRODUCE THIS MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY
WAYNE E. CARTER
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER.

Department of Research, Evaluation, and Information Services
Dallas Independent School District
Dallas, Texas

TM 004 208

A paper to be presented at the Annual Meeting of the American Educational Research Association, Washington, D.C., April, 1975

A Taxonomy of Evaluation Models: Use of Evaluation Models in Program Evaluation

Wayne E. Carter

Dallas Independent School District

Introduction

In 1965 the federal government continued its support of constructive changes in education by passage of Public Law 89-10: The Elementary and Secondary Education Act of 1965. This law explicitly stated that school systems and schools receiving funds through this Act were required to furnish annual evaluations of their projects to state and federal agencies.

The first annual report for Title I of the Elementary and Secondary Education Act indicated that competent evaluation personnel were not generally available in the local school systems at that time. This first report, evaluating thousands of Title I projects, was almost entirely anecdotal in nature and nearly devoid of statistical data in support of the success of the various projects.[1]

To meet the needs created by the passage of this Act, evaluation centers were created in various parts of the country. One of these centers was opened at The Ohio State University in Columbus, Ohio, under the direction of Dr. Daniel L. Stufflebeam.

Stufflebeam and his staff,[2] in examining the first report of the Title I projects, determined that the dearth of adequate evaluation information was due to several problems including the lack of trained evaluators, adequate evaluation theory, and of

adequate instruments and procedures for evaluation. Furthermore, they believed that the following three types of conceptual problems prevented provision of effective evaluation:

1. A lack of understanding of decision processes and information requirements in current programs of educational change;
2. The lack of a definition of educational evaluation pertinent to emergent requirements for educational evaluation; and
3. A lack of appropriate evaluation designs.[3]

The evaluators trained in the evaluation centers have developed many models for the evaluation of educational programs. The wide variety of general purpose and specific purpose models that have been developed since the passage of ESEA suggests a framework for the cooperative use of these models, or parts of these models, is needed. No such framework or taxonomy has been attempted in recent years. This paper is an attempt at the development of a taxonomy of evaluation models for use in evaluating educational programs.

Objective

The purpose of this paper is to present a framework or taxonomic representation of existing educational evaluation models. The models considered in this paper are those based on the Stufflebeam - Phi Delta Kappa National Study Committee on Evaluation

definition of education evaluation as the process of delineating, obtaining, and providing useful information for judging decision alternatives.

Methodology

The methodology used by the author consisted of a search of the literature pertaining to educational information needs and evaluation models and, based on the literature, comparisons of these models. Many similarities were noted in all models. It was also noted that several models were strong in different areas, and that, depending on the objectives of the evaluation being conducted, two or more of the models could be combined to accomplish the evaluation more effectively than the use of a single model.

Results of the Literature Search

In 1973, Sara M. Steele[4] identified six groups or types of program evaluation approaches. These were: (1) evaluation as input into decision-making, (2) evaluation of program parts, (3) evaluation--kinds of data and types of activities, (4) evaluation processes, (5) results--attainment of objectives, and (6) results--evaluation of outcomes and effects. Since the scope of this study is limited to models using the Stufflebeam - PDK definition, only the models identified in Steele's first category--evaluation as input into decision making--were considered. These included (1) the Context-Input-Process-Product (CIPP) model developed by Stufflebeam; (2) the Differential Evaluation Model

developed by Tripodi, Fellin, and Epstein; (3) the Descrepancy Evaluation Model (DEM) developed by Provus; (4) Developmental Evaluation Models such as the IPI Formative Evaluation Model developed by Lindvall and Cox and the NewStart Evaluation System developed by Lamrock, Smith, and Warren; (5) the Priority Decisions Model developed by Boyle; (6) Materials Evaluation Models such as the Trade-Off and Comparative Cost Approach developed by Glass and the Weighted Criteria Approach developed by Crane and Abt; and (7) the Participant Reaction Approach developed by Steele.[5]

In addition to the list provided by Steele, the researcher has identified several models each of whose purpose is the provision of information for the decision-making process. These models are (1) a Cost Effectiveness Model developed by Alkin,[6] (2) a Decision Oriented Classification Schema developed by Alkin and Wooley,[7] (3) a Comprehensive Management Model for Title III Projects developed by the Fairfax County (Virginia) Public Schools,[8] (4) an Ontological Evaluation Model developed by Peper,[9] (5) a Systems Approach Model developed by Yost and Monnin,[10] (6) the Apex Model developed by Morgan,[11] (7) Cost Utility Models developed by Costa and Tanner,[12] (8) the Synergistic Model developed by Hunter and Schooley,[13] (9) the New Eclectic Model developed by Alkin and Kosecoff,[14] and (10) A Taxonomy of Administrative Information Needs developed by Ott (The Ott Model).[15]

The preceding list is not intended to be complete. It is intended to be representative of the models that are based on the

Stufflebeam - Phi Delta Kappa National Study Committee on Evaluation's definition of Educational Evaluation as the process of delineating, obtaining, and providing useful information for judging decision alternatives. In short, those models that were developed for input into the decision process.

For the purpose of constructing a Taxonomy of Evaluation Models, each of the models identified as a general purpose model was evaluated according to criteria adapted from I.T. Kirby's unpublished Ph.D. dissertation at the University of Illinois, "An Approach to Decision Making." These criteria are:

1. The model should assist the evaluator in anticipating all information needed for the decision process.
2. The model should be internally logical and complete.
3. The model should be of sufficient clarity so as to allow implementation by a trained evaluator without external interpretation.
4. The model should relate elements in a way in which they have not previously been related.
5. The model should be heuristic.
6. The model should be capable of being extended by empirical study.
7. The model should be efficient.

The models identified as general purpose models were: the CIPP Model; the Differential Evaluation Model; the Discrepancy Evaluation Model; the Decision Oriented Classification Model; the

Comprehensive Management Model; A systems Approach; and Apex Model; the Synergistic Evaluation Model; and the Ott Model.

The forerunner of all of the modern educational evaluation and information needs models is the CIPP Model developed by Dr. Daniel Stufflebeam of the Evaluation Center of The Ohio State University and later refined by the Phi Delta Kappa Study Committee. This model was constructed to help meet the evaluation requirements of Title I and Title III of the Elementary and Secondary Education Act of 1965 and to provide a means by which information about a particular program, or group of programs, could be supplied for the decision-making process.

The Differential Evaluation Model was developed by Tripodi, Fellin, and Epstein to provide a framework by which administrators of health, education, and welfare programs could obtain information for determining the effectiveness, efficiency, and accomplishments of these programs. The process, as developed in this model, was based on the three stages of program development - program initiation, program contact, and program implementation - and sought to delineate objectives appropriate to these stages and then to match evaluation techniques to these objectives.

The Discrepancy Evaluation Model was developed by Provus to provide evaluative information for program improvement, maintenance, or termination by defining program standards, determining whether discrepancies exist between these standards and actual performance,

and using the discrepancy information to change performance or standards. Provus divides the evaluation techniques applied to ongoing programs into design, installation, process, product, stages and an optional comparison stage. Discrepancies are determined by examination of three content categories (input, process, and output) at each of the stages and by comparison of the program performance information obtained with previously defined standards at each stage. The nature and severity of the discrepancies found would lead the decision makers to decide to (1) terminate the program; (2) make adjustments in the previously designated standards; or (3) change the program performance.

The Decision Oriented Classification Model was developed by Alkin and Wooley to assist evaluators in (1) determining decision areas of concern; (2) selecting appropriate information; and (3) collecting and analyzing information for use in the decision process. Alkin and Wooley identified five areas of evaluation that yield useful information for the decision process. These areas are systems assessment, program planning, program implementation, program improvement, and program certification.

The Comprehensive Management Model was developed by the University of Kentucky's Research Foundation for the Center for Effecting Change of the Fairfax County (Virginia) Public Schools. The model was developed to assist in the planning and evaluation of the Second National Study of Projects to Advance Creativity in Education (PACE). Like the CIPP Model, this model was constructed

to apply to every phase of a project from inception to termination. Specifically, the model itself "is designed to assist in all phases of a PACE project. As such, it could be useful for "(a) those who write proposals, (b) those who operate projects, and (c) those who evaluate projects in terms of general improvement and in terms of continuation."[16]

The Systems Approach was developed by Yost and Monnin to provide a specific model for the evaluation of programs funded under Title III of the Elementary and Secondary Education Act of 1965. Drawing heavily on the CIPP model, the Systems Approach was constructed to include delineation, collection, interpretation, and distribution activities at each of three stages (baseline, process, and product) appropriate to the general evaluation of Title III projects.

The Apex Evaluation Model was developed to evaluate the North Carolina Exemplary Program, funded under Part D of the Vocational Education Amendment of 1968 (P.L. 90-576, Section 141). The model, presented by Morgan, was based on: (1) the intent of legislation; (2) the program objectives (desired outcomes); (3) the process objectives (desired processes); (4) the observed processes (operational procedures and resources); and (5) the output of the program along with the static interrelationships between these components.

The Synergistic Evaluation Model was developed by Hunter and Schooley to satisfy the need for united efforts between curriculum

developers and researchers. The use of this model attempted to provide interaction between these experts in conducting meaningful research for input into administrative decision making. To accomplish this task, Hunter and Schooley conceptualized an educational system as consisting of four domains: policy; program development; instruction; and feedback, and the constituents and clients of the system as falling into six exhaustive but not necessarily mutually exclusive groups: students; instructional staff; administrative staff; educational specialists; family; and community. Input from all of these groups, according to the authors, must occur within each of the four domains of the evaluation model.

The Ott Model, A Taxonomy of Administrative Information Needs: An Aid to Educational Planning and Evaluation, is an outgrowth of Ott's earlier work "A Decision Process and Classification System for Use in Planning Educational Change." In this earlier paper, Ott conducted an empirical study of projects in Columbus, Ohio, that were funded under Title I of the Elementary and Secondary Education Act of 1965. In this study, the decision process was defined as beginning with a recognition of the need or potential need for an alternative and as ending with the implementation of the chosen course of action.

To develop his Classification System of Decision Situations, Ott observed the decision process used by the Title I projects and those areas of the projects in which decisions were most frequently

made. These frequent decision areas were determined to be decisions relative to Target, General Policy, Objectives, Program, Resources, Schedules, and Program Policy. Ott refined the Schema of the decision process and combined this refinement with the areas in which decisions must be made most frequently to develop the taxonomy for administrative information needs.

The results of the author's previous work indicated that the Ott model, by its construction to be a logical and viable starting point for the development of a taxonomy of evaluation models.[17] Therefore, the author compared each of the general purpose models considered above with the Ott Model on the previously identified evaluative criteria.

Table 1 summarizes the results of the comparisons between the Ott Model and each of the general purpose models found in the literature. The table indicates those criteria on which the Ott Model was superior (+), inferior (-), and about equal (=) to the model under consideration.

Model	Criteria Used to Judge the Ott Model: Anticipating All Information	Internal Logic and Completeness	Clarity	Uniqueness	Heuristic	Extension By Empirical Study	Efficiency
CIPP Model	-	+	+	=	=	=	+
Differential Evaluation Model	+	=	=	=	=	=	-
Discrepancy Evaluation Model	+	+	+	=	=	=	=
Decision Oriented Classification Model	+	=	+	=	=	=	+
Comprehensive Management Model	+	=	+	=	=	=	-
Systems Approach	+	+	+	+	=	=	+
The Apex Model	-	-	+	=	=	=	+
The Synergistic Model	+	+	+	=	=	=	+

Note. The table indicates those criteria on which the Ott Model was superior (+), inferior (-), and about equal (=) to the model under consideration.

Table 1. Summary of the Comparisons Between the Ott Model and the General Purpose Models

The remainder of the models and their identified specific purposes were: The IPI Formative Evaluation Model and the NewStart Evaluation System for the evaluation of instructional and individualized curriculum packages; the Priority Decisions Model for determining program priorities; the Trade-Off and Comparative Cost Approach and the Weighted Criteria Approach for the evaluation of educational materials; the Participant Reaction Approach as evaluative input into program modification; the Cost Effectiveness Model and the Cost Utility Models for evaluation of programs in terms of program costs; the Ontological Evaluation Model for evaluation of the organization in which a program functions; and the New Eclectic Model for framing the decision context of a program evaluation.

The IPI Model uses formative evaluation, individual pupil monitoring techniques, and summative evaluation to assess the goals that the program should achieve, the plans for achievement of these goals, the amount of agreement between the actual program and the intended program, and the achievement of the intended goals. Formative evaluation is also used to insure that each of the steps in the program or package is accomplished with care and quality. Weaknesses, if discovered at any step, provide information for modification of preceding steps.

Lamrock, Smith, and Warren use formative and summative evaluation activities, in the NewStart Model, to get information that will help users in installation of developed and tested

course packages. This information was based on the topic areas where decisions are made (policy level; types of intervention, dissemination, and organizational structure; methods and systems of evaluation and measurement; the theory and models of training practices; student progress; ability, style, personality and training of tutors; and curriculum content), the type of data bases used in the decision, the source of the data for the decision, and the timeliness of the decision.

The Priority Decision Model was developed by Boyle to help decision makers determine program priorities. These techniques are especially useful when administrators are faced with too much content to teach, too many problems to solve, or too many clients to reach and serve effectively.

The Trade-Off and Comparative Cost Approach is based on practical and prudential considerations for examining materials for possible adoption. The actual areas presented for consideration by the model are: (1) product description (to provide a detailed description of the product under consideration); (2) goals evaluation (to determine the goals of the product and their appropriateness); (3) clarification of point of entry of the evaluator (to determine the reversible and irreversible decisions to be served); (4) trade-offs (to determine the kinds of trade-offs, the alternative methods, and the possible effects of the trade-offs); (5) comparative cost analysis (to examine the product cost and compare the cost with the cost of alternative products);

(6) intrinsic evaluation (to assess the technical quality, content, and uniqueness of the medium involved, and to survey the availability of resources needed for use of the product); (7) outcome evaluation (to assess the learning rate and methods used, the knowledge acquisition and rationale used, and the retention of knowledge); (8) summative judgments and recommendations (to judge the quality and effectiveness of the product and to make recommendations for potential consumers, current developers or sponsors); (9) circumstances modifying the summative judgments (to examine the scope of the value claims and to test conditions that could cause modification of the recommendations); and (10) evaluate the evaluator (to explore possible motives, biases, and considerations that may have influenced the evaluator).

The Weighted Criteria Approach was founded on cost effectiveness techniques and then applied to curriculum materials to analyze components, quality, and cost of the product or material under consideration. The components of the model are weighted by relative importance. The components of the model are: (1) coverage (in terms of scope and quality); (2) appropriateness; (3) motivational effectiveness (for both the student and the teacher); and (4) cost (in terms of dollar amounts and time). The Weighted Criteria Approach can be used to assess relative merit of two or more alternative materials.

The Participant Reaction Approach was developed by Steele specifically to evaluate adult education and extension courses.

Steele felt that these types of programs, being more scattered than centrally located, would be more easily evaluated by seeking the reaction of the clients served by the programs. To accomplish this, steele employs a variety of techniques such as steering committees, analyses of attendance and reenrollment records, and end-of-session reaction forms. The information gathered in this manner is intended for use in making decisions about program modifications.

The cost Effectiveness Model was developed by Alkin based on the techniques of cost-benefit analysis. After reviewing the shortcomings of cost-benefit analysis, Alkin sought to present evaluation techniques capable of consideration of all relevant elements of an educational system (at the school district level) to: (1) compare educational outcomes of different units; (2) assess the impact of alternative levels of financial input; and (3) select alternative approaches to the achievement of specified educational outcomes.

Costa undertook the study and presentation of Cost Utility Models to provide viable forms of cost effectiveness - cost benefit analysis evaluation techniques for use by existing school staff. The information resulting from the application of these evaluation models was intended to provide input into the decision-making process in the school system under consideration. Costa

presents two models (Tanner's Model developed by Tanner and the Milwaukee Model developed by Costa and Giroux) that (1) can be used by administrators and their staffs to choose between alternative programs; (2) use relatively easy computational formulas; (3) lack confusing "jargon"; and (4) are able to provide valuable rational decision-making information.

The Ontological Evaluation Model was developed by Peper to fill what he considered to be a void in the then existing evaluation models - a model that would focus on the organization as a whole and not on a single program within the organization.

In constructing this model, Peper conceptualized two areas of organizational development: organizational characteristics and phases of organizational development. Organizational characteristics are morphology or structure, systems, kinesthesia or thrust, and kinship linkages. The phases of organizational development are preemergent, emergent, familial dependent, familial independent and independent.

The New Eclectic Model was developed by Alkin and Kosecoff to provide a means of putting together the "old but still good ideas" in eclectic or unique ways. Thus the model seeks to use the best evaluation models and ideas selected from existing sources to structure the evaluation process. The actual model requires four steps or procedures: (1) framing the decision context; (2) building the evaluation system; (3) determining techniques and

methodologies; and (4) preparing and reporting evaluation information. Believing that the last three areas presented above are those which lend themselves easily to the "old but still useful ideas," Alkin and Kosecoff stress only the step for framing the decision context.

Results

Before presenting the framework for the cooperative use the general and specific purpose models discussed previously let us examine the Ott Model more closely.

To develop his Classification System of Decision Situations, Ott observed the decision process used by the Title I projects and those areas of the projects in which decisions were most frequently made. These frequent decision areas were determined to be decisions relative to Target, General Policy, Objectives, Program, Resources, Schedules, and Program Policy. Ott refined the Schema of the decision process and combined this refinement with the areas in which decisions must be made most frequently to develop the taxonomy of administrative information needs.

The Ott Model is presented in Figure 1. The areas in which decisions must be made most frequently (Target, General Policy, Objectives, Program, Resources, Schedules, and Program Policy), comprise the first dimension of a two-dimensional framework in the Ott Model. The second dimension consists of the stages of the decision process for which the information is needed. These stages are: (1) Recognition of the Present of Potential Problem,

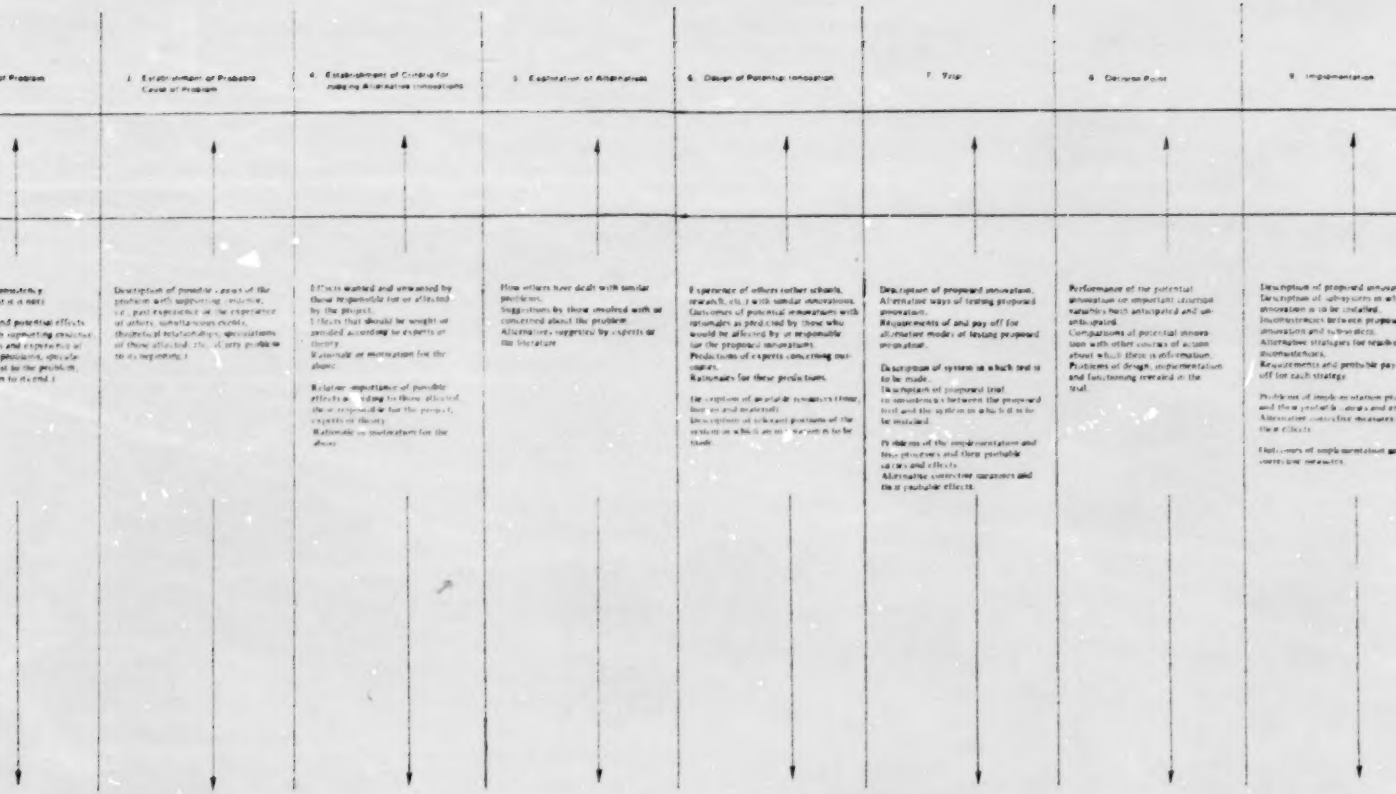
3. Establishment of Criteria for Judging Alternative Innovations
5. Design of Potential Innovation
7. Trial
8. Decision Point
9. Implementation

Figure 1. A Taxonomy of Administrative Information Needs

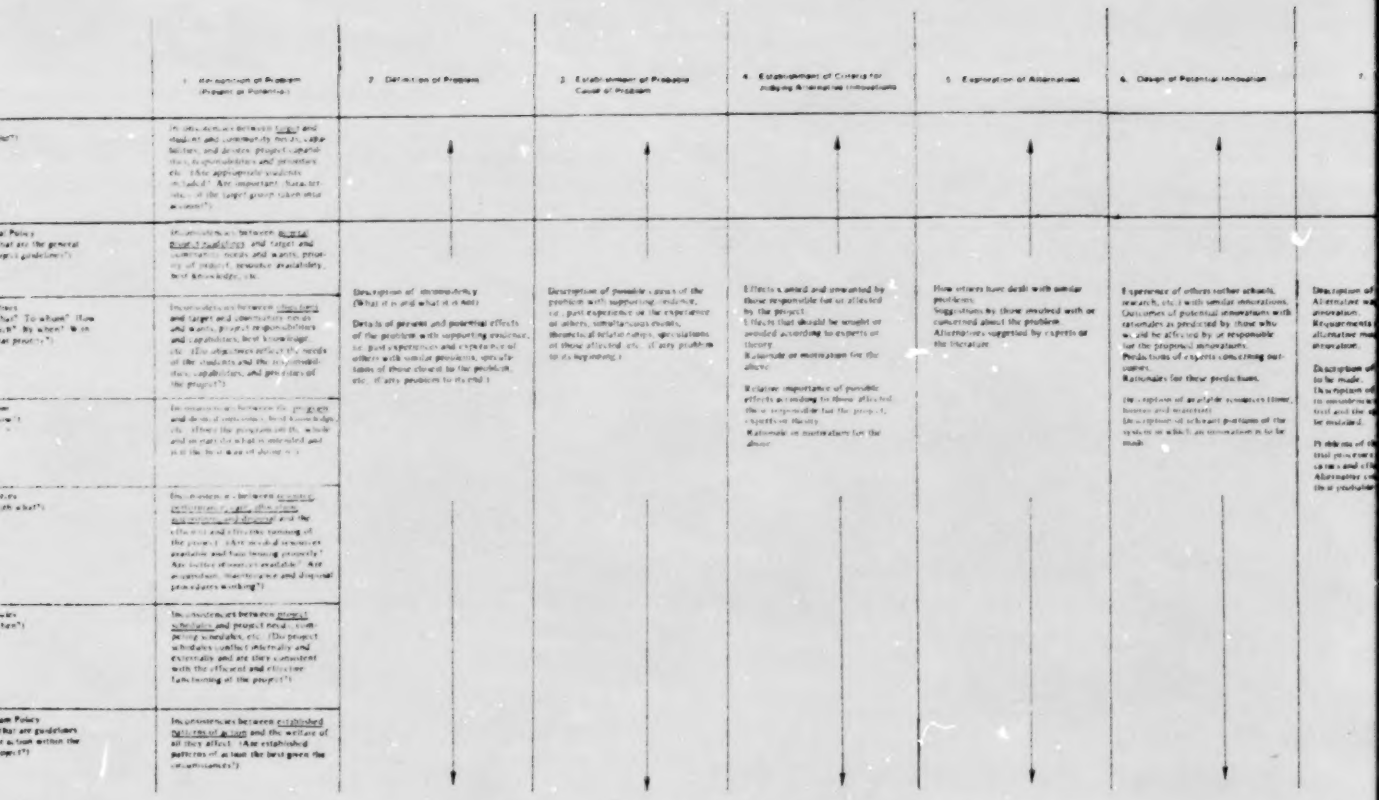
2. Definition of Problem
3. Establishment of Probable Cause of Problem
4. Establishment of Criteria for Judging Alternative Innovations
5. Exploration of Alternatives
6. Design of Potential Innovation

Figure 1. A Taxonomy of Administrative Information Needs

(2) Definition of the Problem, (3) Establishment of a Probable Cause of the Problem, (4) Establishment of Criteria for Judging Alternative Innovations, (5) Exploration of Alternatives, (6) Design of Potential Innovations, (7) Trial, (8) Decision Point, and (9) Implementation.

The major program evaluation emphasis of the Ott Model is found in the first stage of the decision process--the Recognition of the present or Potential Problems. It is this stage which fully examines the areas of the program in which decisions are most frequently made. The key question and information needed for each area of concern within this stage are categorized below.

Target: What are the characteristics and needs of the target population? Are these needs taken into consideration? Is the appropriate student included in the program? Are there inconsistencies between the needs of the target population, the student and community needs, and the project capabilities, priorities, and responsibilities?

General Policy: What are the general guidelines for the project? What general policies of the parent system affect the target population? Are there any inconsistencies between the guidelines for the project and the general policies of the parent system?

Objectives: What are the project or program objectives? Do the objectives reflect the needs of the identified target population and the capabilities and priorities of the project?

Program: What are the characteristics of the program involved? Are there inconsistencies between the program and the desired solutions or outcomes? Is the program actually accomplishing what it intended? Is the program efficient?

Resources: What resources are needed? What resources are being used? Is the project making the best use of resources at its disposal? Is there an efficiently functioning support system for resource supply and maintenance?

Schedules: Can the project accomplish its intended objectives in the time specified? Are there internal and/or external inconsistencies that will affect the accomplishment of the project objectives according to the stated schedule?

Program Policy: What are the project guidelines for action within the project? Are there inconsistencies between the project action and the needs of the target population?

Any discrepancies and inconsistencies in data that are found during the process of answering these questions will provide an indication of a present or potential problem. When this occurs, the process continues through the following stages.

The Definition of the Problem is the stage at which the inconsistencies are described. Information needed here includes the details of the present and potential effects of the problem with supporting evidence such as past experiences with similar problems, similar experiences of others, and speculation of those closely involved in the problem area.

Stage III: The Establishment of Probable Cause of the Problem includes a description of possible causes of the problem. Information needed includes supporting evidence such as past experience or experiences of others, simultaneous events, theoretical relationships, and speculation of those affected.

Stage IV. The Establishment of Criteria for Judging Alternative Innovations includes specification of the effects wanted and unwanted by those responsible for the project and deciding upon effects that should be sought or avoided. Information is needed to establish the relative importance of possible effects according to those affected, those responsible for the project, and theory or experts. Rationale for this information should also be included.

Stage V. The Exploration of Alternatives Stage indicates how others have dealt with similar problems. Information needed at this stage includes the suggestions of those concerned or involved with the program, and alternatives suggested by experts or the literature.

Stage VI. The Design of the Potential Innovations, draws upon the experience of others, and examination of the outcomes of similar innovations. The information needed includes the prediction of experts concerning outcomes, description of available resources, (time, human, and material), and description of relevant portions of the system in which an innovation must be made. The rationale for the above information should also be included.

Stage VII. The Trial Stage includes a description of the proposed innovation and alternate ways of testing the proposed in-

novation including the requirements of, and "pay-off" for the alternative modes of testing the proposed innovation. Information needed for this stage includes a description of the system in which the test is to be made, a description of the trial, the inconsistencies between the trial and the system in which it is to be installed, the problems of the implementation and trial processes and their probable causes and effects, and alternative corrective measures and their probable effects.

Stage VIII. The Decision Point Stage compares the performance of the potential innovation on important criterion variables, both anticipated and unanticipated. Information needed includes comparisons of potential innovations with other courses of action, and the problems of design, implementation, and functioning revealed in the trial.

Stage IX. The Implementation Stage includes a description of the innovation, the system or subsystem in which it is to be installed, and any inconsistencies between the innovation and the system. Information needed here includes alternative strategies for resolving the inconsistencies and the effects of these alternatives, requirements and pay-offs for each strategy, problems of implementation and their probable causes, and outcomes of the implementation and corrective measures.

It should be noted at this point that the evaluation process and the information gathering process are continuous processes. As such, information gathered at any subsequent stage

can bring to light problems that were not uncovered before. In fact, new information can serve to reinforce or change a previously made decision.

Now that the Ott Model has been presented, how can we use the previously presented general purpose and specific purpose models with in the Ott Model for the effective and efficient evaluation of educational programs?

This author believes that before any program evaluation is conducted the purpose of the evaluation and the decision makers should be identified. This is not represented explicitly in the Ott Model. The author suggests that the Alkin and Kosecoff Model, "A New Eclectic Model for the Redirection of Evaluation Efforts" be used to frame the decision context. This entails the consideration of the decision maker(s) and/or decision audiences, the explicit decision-making purposes, the implicit decision-making purposes, the developmental stage of the program to be evaluted, and the socio-political setting of the evaluation to be conducted.

Once the evaluator determines the decision context, he is ready to begin the problem recognition stage of the decision process. This stage is the part of the Ott Model that is most similar to the already presented general purpose models and forms the nucleus of the evaluation of an educational program. From Figure 1, it is obvious that this is also the most detailed part of the model. The areas of concern to decision makers, suggested information, and general purpose and specific models that could be used to provide information needed for decision makers is listed below.

The reader will note that use of the Ott Model requires background information about all areas of concern to decision makers. If this is not available or complete, the evaluator can use needs assessment techniques presented in the needs assessment section of the proposal development phase of the Comprehensive Management Model, or the systems assessment phase of the Decision Oriented Classification System.

To collect information for the recognition of problems in the area of the target population, the evaluator could use the techniques of the Discrepancy Evaluation Model, the Differential Evaluation Model, or the Priority Decisions Model. Information for the recognition of problems in the area of general policies could be gathered by use of the Participant Reaction Approach, the Priority Decision Model, and the Discrepancy Evaluation Model. In the area of objectives, the evaluator could use the Participant Reaction Approach or the techniques of the Discrepancy Evaluation Model. Inconsistencies between the actual outcomes and the desired outcomes would be determined by the "traditional" statistical analysis techniques. In the area of resources, information could be provided by the evaluator's use of the Participant Reaction Approach and the Descrepancy Evaluation Model. Information about schedule conflicts could be provided through the use of the Participant Reaction Approach. Finally, the Priority Decision Model and the Participant Reaction Approach could be used to provide information about the program policy and the established patterns of action within the program.

When the evaluator, through analysis of the data collected in the first stage, recognizes the existence of a present or potential problem, he initiates the implementation of the subsequent stages of the decision process. The exact techniques and method used to gather information at each of these stages depends on the nature of each of the problems identified. Some of the general and specific purpose models that could be used are presented below.

At the problem definition stage, the description of the problem itself should be a result of the analysis of the information gathered in the previous stage. Details of actual and/or potential effects of this problem and supporting evidence, could be gathered by use of a literature search of past experiences of other persons with similar programs.

In the third stage, Establishment of Probable Cause of Problem, the description of possible causes of the problem (with supporting evidence) could be determined by statistical analysis Participant Reaction Approaches, and literature techniques.

For stage 4, Establishment of Criteria for Judging Alternative Innovations, the necessary information for determining the effects wanted or unwanted, and their relative importance, can be supplied by using the procedures and techniques designed to evaluate the needs and alternative ideas in the Priority Decisions Model.

In the Design of the Potential Innovation Stage (Stage 5) the information needed by decision makers includes how others have

dealt with similar problems, suggestion of participants, and alternatives suggested by experts or professionals. This information can be provided through the Participant Reaction Approach and through a search of the relevant literature.

In the Design of the Potential Innovation, (stage 6) the evaluator needs to supply information to the decision makers about experiences of others with similar innovations, potential outcomes, descriptions of available resources, and descriptions of the relevant portion of the system in which the innovation is to be made. This information can be provided by using the Developmental Models (such as IPI and NewStart techniques), Material Evaluation techniques (such as the Trade-off and Comparative Cost Approach or the Weighted Criteria Approach), and the Cost-Effectiveness and Cost Utility Models.

At the Trial Stage (Stage 7) the innovation or alternative innovations are tested for their suitability for eliminating the problem. The Trade-off and Comparative Cost Approach would provide information about alternative ways of testing the innovation. The Ontological Model could provide a description of the system in which the test is to be made and the inconsistencies between the proposed trial and the system in which it is to be installed. The IPI and NewStart Models could be used to reveal problems of implementation, and to identify corrective measures to be considered.

At the Decision Point (Stage 8) the results of the Trial

Stage are considered. Information is needed here on the performance of the innovation on important criterion variables, on comparisons of the potential innovations with other courses of action, and on problems of design, implementation and function of the innovation that were revealed in the trial. This information can be provided by analysis of the information gathered at the trial stage.

In the Implementation Stage (stage 9) information relative to the proposed innovation, the sub-system in which it is to be installed, actual or potential inconsistencies between the innovation and the subsystem, alternative strategies for resolving these inconsistencies, potential implementation problems, and possible outcome of the implementation is needed. This information can be provided by the Developmental and Materials Evaluation Models, the Ontological Evaluation Model, the Discrepancy Evaluation Model, and the techniques outlined in the Differential Evaluation Model.

In summary, it is the author's belief that the use of the Ott Model "A Taxonomy of Administrative Information Needs: An Aid to Educational Planning and Evaluation" as an overall guiding framework for the cooperative use of the many general purpose and special purpose evaluation models found in the literature will provide the necessary evaluative information needed by decision-makers. The use of this framework will provide more effective and efficient program evaluation in public education.

FOOTNOTES

[1]Daniel L. Stufflebeam, "Evaluation as Enlightenment for Decision Making," (Columbus, Ohio: The Evaluation Center, The Ohio State University, 1968), p. 5, (Mimeographed).

[2]Ibid., p. 8.

[3]Ibid., P. 16.

[4]Sara M. Steele, "Contemporary Approaches to Program Evaluation and Their Implications for Evaluating Programs for Disadvantages Adults" (Syracuse: ERIC Clearinghouse on Adult Education, 1973) (Microfiche ERIC ED 075 715).

[5]Ibid., p. 51.

[6]Marvin C. Alkin, "Evaluating the Cost Effectiveness of Instructional Programs," Proceedings of the Symposium on Problems in the Evaluation of Instruction, (Los Angeles: University of California) (Microfiche ERIC ED 031 818).

[7]Marvin C. Alkin and Dale C. Wooley, "A Model for Educational Evaluation" (paper presented to the PLEDGE Conference, San Dimas, California, October 8-11, 1969) (Microfiche ERIC ED 036 898).

[8]Fairfax County (Virginia) Public Schools, Center for Effecting Educational Change, "A Comprehensive Model for Managing an ESEA Title III Project from Conception to Culmination" (Micro-fiche ERIC ED 039 278).

[9]John B. Peper, "An Ontological Model of Evaluation: A Dynamic Model for Aiding Organizational Development" (paper presented at the AERA Annual Meeting, New Orleans, February 26 - March 1, 1973) (Microfiche ERIC ED 078 039).

[10]Marlen Yost and Frank J. Monnin, "A Systems Approach to the Development of an Evaluation System of ESEA Title III Projects" (unpublished research paper) (Microfiche ERIC ED 047 356).

[11]Robert L. Morgan, "An Approach to Evaluation: A Model for Evaluation of the North Carolina Exemplary Program" (Raleigh: North Earolina State University, 1970) (Microfiche ERIC ED 042 910).

[12]Crist H. Costa, "Cost Utility: An Aid to Decision Making" (paper presented at the AERA Annual Meeting, New Orleans, February 25 - March 1, 1973) (Microfiche ERIC ED 074 623).

[13]Michael G. Hunter and Daniel E. Schooley, "The Synergistic Evaluation Model" (paper presented at the AERA Annual Meeting, New Orleans, February 25 - March 1, 1973) (Mimeographed).

[14]Marvin C. Alkin and Jacqueline B. Kosecoff, "A New Eclectic Model for the Redirection of Evaluation Efforts" (paper presented at the AERA Annual Meeting, New Orleans, February 25 - March 1, 1973) (Mimeographed).

[15]Jack M. Ott, Sheila Fletcher and Donald Turner, "A Taxonomy of Administrative Information Needs: An Aid to Educational Planning and Evaluation," Educational Technology, May, 1973.

[16]Fairfax County (Virginia) Public Schools, Op cit., p. 5.

[17]Wayne E. Carter, "An Evaluation of an Evaluation Model," (paper presented at the AERA Annaul Meeting, Chicago, April 16, 1974) and Wayne E. Carter, "A Taxonomy of Administrative Information Needs: An Evaluation of the Model," Unpublished Ph.D. dissertation, College of Education, University of South Carolina, 1974.

BIBLIOGRAPHY

A. PRIMARY SOURCES

Alkin, Marvin C. "Evaluating the Cost Effectiveness of Instructional Programs," Proceedings of the Symposium on Problems in the Evaluation of Instruction. Los Angeles: University of California, 1967.

Alkin, Marvin C. and Dale C. Wooley. "A Model for Educational Evaluation." Paper presented to the PLEDGE Conference, San Dimas, California, October, 1969. (Microfiche ERIC ED 036 898).

Alkin, Marvin C. and Jacqueline B. Kosecoff. "A New Eclectic Model for the Redirection of Evaluation Efforts." Paper presented at the American Educational Research Association Annual Meeting, New Orleans, February, 1973. (Mimeographed).

Aurasian, Peter W., George F. Modous, and Ernest A. Rakow. "An Instructional Evaluation Monitoring System," Curriculum Theory Network. Joel Weiss, ed. Ontario: The Ontario Institute for Studies in Education, 1972.

Brickell, Henry M. "A Critique of the Phi Delta Kappa Committee Study on Evaluation." Part of the Symposium report on the Critique of the Report of the Phi Delta Kappa Study Committee on Evaluation, American Educational Research Association Annual Meeting, New York, February, 1971. (Microfiche ERIC ED 056 074).

Costa, Crist H. "Cost Utility: An Aid to Decision Making." Paper presented at the American Educational Research Association Annual Meeting, New Orleans, February, 1973. (Microfiche ERIC ED 074 623).

Dubois, Philip H. and G. Douglas Mayes (eds.). Research Strategies For Evaluating Training. AERA Monograph Series on Curriculum Evaluation. Chicago: Rand McNally, 1970.

Fairfax County (Virginia) Public Schools, Center for Effecting Educational Change. "A Comprehensive Model for Managing an ESEA Title III Project from Conception to Culmination." (Microfiche ERIC ED 039 278).

Flanagan, John C. "A Critique of the Measurement and Instrumentation of Educational Evaluation and Decision Making." Paper presented at the Symposium on Critique of the Report of the

Phi Delta Kappa Study Committee on Evaluation, American Educational Research Association Annual Meeting, New York, February, 1971. (Microfiche ERIC ED 050 138).

Glass, Gene V. "Educational Product Evaluation: A Prototype Format Applied," Educational Researcher, 1 (1), 1972, 1-4.

Hoffenberg, Marvin. "Comments on Professor Alkin's Paper Entitled 'Evaluating the Cost Effectiveness of Instructional Programs'," Proceedings of the Symposium on Problems in the Evaluation of Instruction. Los Angeles: University of California, Los Angeles, 1967. (Microfiche ERIC ED 074 623).

Hunter, Michael G. and Daniel E. Schooley. "The Synergistic Evaluation Model." Paper presented at the American Educational Research Association Annual Meeting, New Orleans, February, 1973. (Mimeographed).

Kirby, Inabel T. "An Approach to Decision Making." Unpublished Ph.D. dissertation, Department of Education, University of Illinois, 1965.

Michael, William B. "A Critique of the Methodology of Evaluation in the Phi Delta Kappa Volume Educational Evaluation and Decision Making." Part of the report of the Symposium on the Critique of the Phi Delta Kappa Study Committee on Evaluation, American Educational Research Association Annual Meeting, New York, February, 1971. (Microfiche ERIC ED 057 074).

Morgan, Robert L. "An Approach to Evaluation: A Model for Evaluation of the North Carolina Exemplary Program." Raleigh: North Carolina State University, 1970. (Microfiche ERIC ED 042 910).

National Society for the Study of Education. Educational Evaluation: New Roles, New Means. Part II. Chicago: University of Chicago Press, 1969.

Ott, Jack M. "A Planning Process and Classification System for Use in Planning Educational Change." Columbus, Ohio: The Evaluation Center, The Ohio State University, 1967. (Mimeographed).

Ott, Jack M., Sheila Fletcher, and Donald G. Turner. Taxonomy of Administrative Information Needs: An Aid to Educational Planning and Evaluation." Educational Technology, 6 (5), 1966, 29-31.

Peper, John B. "An Ontological Model of Evaluation: A Dynamic Model for Aiding Organizational Development." Paper presented at the American Educational Research Association Annual Meeting, New Orleans, February, 1973. (Microfiche ERIC ED 078 039).

Provus, Malcolm. Discrepancy Evaluation. Berkeley, California: McCutchan Publishing Corporation, 1971.

Scriven, Michael. "Evaluation: Noble Profession and Pedestrian Practice." Part of the report of the Symposium for the Critique of the Report of the Phi Delta Kappa Study Committee on Evaluation, American Educational Research Association Annual Meeting, New York, February, 1971. (Microfiche ERIC ED 056 074).

Steele, Sara M. "Contemporary Approaches to Program Evaluation and Their Implications for Evaluating Programs for Disadvantaged Adults." Syracuse: ERIC Clearinghouse on Adult Education, 1973. (Microfiche ERIC ED 075 715).

Stufflebeam, Daniel L. "Critique of the Report of the Phi Delta Kappa Study Committee on Evaluation." Symposium report, American Educational Research Association, Annual Meeting, New York, February, 1971. (Microfiche ERIC ED 057 074).

_____. "Evaluation as Enlightenment for Decision Making." Columbus, Ohio: The Evaluation Center, The Ohio State University, 1968. (Mimeographed).

_____ and others. Educational Evaluation & Decision Making. Itasca, Illinois: F. E. Peacock Publishers, Inc., 1971.

Tripodi, Tony, Philip Fellin, and Irwin Epstein. Social Program Evaluation: Guidelines for Health, Education, and Welfare Administration. Itasca, Illinois: F. E. Peacock Publishers, Inc., 1971.

Waldrop, James L. "Determining 'Most Probable Cause': A Call for Re-examining Evaluation Methodology." Paper presented at the Symposium for Critique of the Phi Delta Kappa Study Committee on Evaluation, American Educational Research Association Annual Meeting, New York, February, 1971. (Microfiche ERIC ED 048 337).

Yost, Marlen and Frank J. Monnin. "A Systems Approach to the Development of an Evaluation System for ESEA Title III Projects." Unpublished research paper. (Microfiche ERIC ED 047 356).

B. SECONDARY SOURCES

Alkin, Marvin C. "Wider Context Goals and Goal-Based Evaluators." The Journal of Educational Evaluation: Evaluation Comment (3) (4).

Becher, J. S. "Investment in Human Capital: Theoretical Analysis," Journal of Political Economy, October, 1963.

Bennes, W., K. Benne, and R. Chris (eds.). The Planning of Change. New York: Holt, Rinehart, and Winston, 1961.

Boyle, Patrick G. "Criteria for Program Priorities." Paper presented at a conference of Extension Home Economists Program Leaders, Washington, November, 1972.

Costa, Crist H. and Roger M. Giroux. "The Rationale and Use of a Proposed Cost-Utility Model." Paper presented at the Wisconsin Educational Research Association, December, 1971.

Crane, Peter and Clark C. Avt. "A Model for Curriculum Evaluation," Educational Technology, IX (October, 1969).

Glass, Gene V. "The Growth of Evaluation Methodology." Unpublished manuscript, Laboratory of Educational Research, University of Colorado, 1969.

Hammond, Robert. "A Design for Local Evaluation," The EPIC Forum. Tucson: EPIC Evaluation Center, 1967.

Haye, Jerald and Michael Aiken. Social Change in Complex Organizations. New York: Random House, 1970.

Lamrock, A. L., A. D. Smith, and P. W. Warren. "Evaluation: Its Scope and System for Evaluating Development." Paper presented at the meeting of the Research Directors of NewStart Corporation, Ottawa, Canada, March, 1971.

Muskin, S. J. (ed.). Economics of Higher Education. Washington: U. S. Department of Health, Education, and Welfare, Office of Education, 1962.

Schultz, T. "Investment in Human Capital," American Economic Review 51: March, 1961, 1-16.

Scriven, Michael. "Pros and Cons About Goal-Free Evaluation." Evaluation Comment, 1972, 3 (4), 1-4.

Stake, Robert. "The Countenance of Educational Evaluation," Teachers College Record, 1967, 68 (7), 523-540.

Steele, Sara M. "Determining the Quality, Importance, and Suitability of Programs." Madison: University of Wisconsin, Department of Agricultural Extension Education, 1970.

_____. "Exploring Participants' Views of Programs." Material prepared of students in a course on Evaluation in Extension, University of Wisconsin, 1972.

Tanner, C. Kenneth. Designs for Educational Planning. Lexington: Heath Lexington Books, 1971.